

The Living Fossil (Horseshoe crab)

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Editors,

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CHAPTER – 31

ENDO SENSOR (TAL) production from Malaysian Horseshoe crab blood

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Abstract

Endotoxins (chemically known as Lipopolysaccharide) from gram-negative microorganisms initiates clot formation in blood when it is accidentally encountered by horseshoe crab blood stream. This property was extensively studied by various researchers as a result *Limulus* Amebocyte Lysate (LAL) test was established. The LAL tests in general, 3 to 300 times more sensitive than the United States Pharmacopeial (USP) rabbit pyrogen test method. It is apparent that major differences among the LAL preparations lie in the area of sensitivity. Differences, up to 100-fold, exist in the sensitivity of the various LAL preparations to the same endotoxin. Based on above perspective a portable Kit (Endo Sensor) was developed to detect the presence of bacterial endotoxin in liquid biological samples using *Tachypleus* Amebocyte Lysate (TAL) as a source. Sensitivity of the Kit was determined using various concentrations of prepared endotoxin standards and pyrogen free water samples. It was observed that Endo sensor could detect up to nano gram level of endotoxin in liquid biological samples which could be expressed in (EU/ml) and the labeled sensitivity of the lysated product was 0.1 EU/ml. The gel clotting principle method was utilized for the detection of bacterial endotoxin in liquid biological samples.

Key words: Endotoxins; *Tachypleus gigas*; *Tachypleus* Amebocyte Lysate; Labeled sensitivity and Endotoxin Unit (EU/ml).

Introduction

Gram negative bacteria are characterized by their outer membrane (cell envelop) which is chemically made up of Lipopolysaccharide (LPS). These bacteria often shed their cell wall